09/868605 Rec'd PCT/PTO 1 9 JUN 2001

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Ser Tyr Lys Cys Gly Thr Asn Thr Met Glu Arg Glu Glu Ser Glu Gln 275 280 285

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Lys Ala Pro His Pro Lys Gln Glu Pro Gln Glu Ile Asn Phe Pro Asp 225 230 235 240

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Gly Lys Val Thr Asn Glu Gly Thr Thr Ser Thr Leu Thr Met Asn Pro 65 70 75 80

Val Ser Phe Gly Asn Glu His Ser Tyr Leu Cys Thr Ala Thr Cys Glu 85 90 95

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Glu Ile Asp Leu Leu Lys Gly Asp His Leu Met Lys Ser Gln Glu Phe 145 150 155 160

Leu Glu Asp Ala Asp Arg Lys Ser Leu Glu Thr Lys Ser Leu Glu Val 165 170 175

Thr Phe Thr Pro Val Ile Glu Asp Ile Gly Lys Val Leu Val Cys Arg 180 185 190



Ala Lys Leu His Ile Asp Glu Met Asp Ser Val Pro Thr Val Arg Gln Ala Val Lys Glu Leu Gln Val Tyr Ile Ser Pro Lys Asn Thr Val Ile 215 Ser Val Asn Pro Ser Thr Lys Leu Gln Glu Gly Gly Ser Val Thr Met 230 235 Thr Cys Ser Ser Glu Gly Leu Pro Ala Pro Glu Ile Phe Trp Ser Lys Lys Leu Asp Asn Gly Asn Leu Gln His Leu Ser Gly Asn Ala Thr Leu Thr Leu Ile Ala Met Arg Met Glu Asp Ser Gly Ile Tyr Val Cys Glu Gly Val Asn Leu Ile Gly Lys Asn Arg Lys Glu Val Glu Leu Ile Val Gln Glu Lys Pro Phe Thr Val Glu Ile Ser Pro Gly Pro Arg Ile Ala 310 315 Ala Gln Ile Gly Asp Ser Val Met Leu Thr Cys Ser Val Met Gly Cys 330 Glu Ser Pro Ser Phe Ser Trp Arg Thr Gln Ile Asp Ser Pro Leu Ser 340 345 350 Gly Lys Val Arg Ser Glu Gly Thr Asn Ser Thr Leu Thr Leu Ser Pro 360 Val Ser Phe Glu Asn Glu His Ser Tyr Leu Cys Thr Val Thr Cys Gly 370 375 380 His Lys Lys Leu Glu Lys Gly Ile Gln Gly Glu Leu Tyr Ser Phe Pro 390 Arg Asp Pro Glu Ile Glu Met Ser Gly Gly Leu Val Asn Gly Ser Ser 405 410 Cys Thr Val Ser Cys Lys Val Pro Ser Val Tyr Pro Leu Asp Arg Leu Glu Ile Glu Leu Lys Gly Glu Thr Ile Leu Glu Asn Ile Glu Phe 440 Leu Glu Asp Thr Asp Met Lys Ser Leu Glu Asn Lys Ser Leu Glu Met 455 Thr Phe Ile Pro Thr Ile Glu Asp Thr Gly Lys Ala Leu Val Cys Gln 475 Ala Lys Leu His Ile Asp Asp Met Glu Phe Glu Pro Lys Gln Arg Gln Ser Thr Gln Thr Leu Tyr Val Asn Val Ala Pro Arg Asp Thr Thr Val Leu Val Ser Pro Ser Ser Ile Leu Glu Glu Gly Ser Ser Val Asn Met



515 520 525

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Gln Leu Ser Lys Ser Val Lys Asp Lys Val Leu Leu Pro Cys Arg Tyr 50 55 60

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His Asp Lys Val Val Leu Ser Val Ile Ala Gly Lys Leu Lys Val Trp 85 90 \cdot 95

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Val Gln Lys Lys Glu Arg Gly Thr Tyr Glu Val Lys His Leu Ala Leu 130 135 140

Val Lys Leu Ser Ile Lys Ala Asp Phe Ser Thr Pro Asn Ile Thr Glu 145 150 155 160

Ser Gly Asn Pro Ser Ala Asp Thr Lys Arg Ile Thr Cys Phe Ala Ser 165 170 175

Gly Gly Phe Pro Lys Pro Arg Phe Ser Trp Leu Glu Asn Gly Arg Glu 180 185 190

Leu Pro Gly Ile Asn Thr Thr Ile Ser Gln Asp Pro Glu Ser Glu Leu 195 200 205

Tyr Thr Ile Ser Ser Gln Leu Asp Phe Asn Thr Thr Arg Asn His Thr 210 215 220

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His Asp Gly Gln Cys Cys Asp Leu Cys Gln Pro Gly Ser Arg Leu Thr 35 40 \cdot 45

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Gly Glu Phe Ser Ala Gln Trp Asn Arg Glu Ile Arg Cys His Gln His 65 70 75 80

Arg His Cys Glu Pro Asn Gln Gly Leu Arg Val Lys Lys Glu Gly Thr $85 \hspace{1cm} 90 \hspace{1cm} 95$

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165 170 175

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Arg Ala Leu Leu Val Ile Pro Val Val Met Gly Ile Leu Ile Thr Ile 195 200 205

Phe Gly Val Phe Leu Tyr Ile Lys Lys Val Val Lys Lys Pro Lys Asp 210 215 220

Asn Glu Met Leu Pro Pro Ala Ala Arg Arg Gln Asp Pro Gln Glu Met 225 230 235 240

Glu Asp Tyr Pro Gly His Asn Thr Ala Ala Pro Val Gln Glu Thr Leu 245 250 255

His Gly Cys Gln Pro Val Thr Gln Glu Asp Gly Lys Glu Ser Arg Ile 260. 265 270

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Asn Phe Ser Gln Pro Glu Ile Asn Leu Leu Thr Asn His Thr Glu Asn
                        135
Ser Val Ile Asn Leu Thr Cys Ser Ser Thr Gln Gly Tyr Pro Glu Pro
Gln Arg Met Tyr Met Leu Leu Asn Thr Lys Asn Ser Thr Thr Glu His
                                    170
Asp Ala Asp Met Lys Lys Ser Gln Asn Asn Ile Thr Glu Leu Tyr Asn
Val Ser Ile Arg Val Ser Leu Pro Ile Pro Pro Glu Thr Asn Val Ser
Ile Val Cys Val Leu Gln Leu Glu Pro Ser Lys Thr Leu Leu Phe Ser
    210
                        215
                                             220
Leu Pro Cys Asn Ile Asp Ala Lys Pro Pro Val Gln Pro Pro Val Pro
                    230
                                        235
Asp His Ile Leu Trp Ile Ala Ala Leu Leu Val Thr Val Val Val Val
                245
                                    250
Cys Gly Met Val Ser Phe Val Thr Leu Arg Lys Arg Lys Lys Gln
                                265
Pro Gly Pro Ser Asn Glu Cys Gly Glu Thr Ile Lys Met Asn Arg Lys
                            280
        275
                                                 285
Ala Ser Glu Gln Thr Lys Asn Arg Ala Glu Val His Glu Arg Ser Asp
                        295
Asp Ala Gln Cys Asp Val Asn Ile Leu Lys Thr Ala Ser Asp Asp Asn
305
                    310
                                        315
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Ser Thr Thr Asp Phe Leu Lys Ser Lys Leu
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tgcccgccag gacagaaact ggtgaaccac tgcacagagg tcactgaaac agaatgcctt 180
ccttgcagtt ccagcgaatt cctagccacc tggaatagag agaaacactg tcatcagcac 240
aaatactgcg accccaacct aggtctccag gtccagaggg agggcacctc gaaaacagac 300
accacttgtg tgtgcagtga aggccatcac tgtaccaaca gcgcctgtga aagttgcacc 360
ttgcacagct tgtgcttccc tggcctcggg gtcaagcaga tggcgacaga ggtttctgac 420
actatctgtg aaccctgccc agttggcttc ttctccaatg tatcatctgc ttcagaaaag 480
tgtcagcctt ggacaagctg cgagagcaaa ggcctggtgg aacaacgtgc ggggactaac 540
aagaccgatg ttgtctgtgg tttccagagt cggatgagag ccctggtggt tatccccatc 600
acgctgggga tcctgtttgc cgtcctgttg gtatttctct gtatcagaaa ggtgaccaag 660
gagcaggaga ctaaggccct gcaccctaag actgaaaggc aggatcccgt ggagacgatt 720
gatctggagg attttcccga ctccaccgct ccggtgcagg agaccttaca ttggtgccag 780
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<212> PRT <213> Porcus

<400> 16

Met Val Arg Leu Pro Leu Gln Cys Leu Leu Trp Gly Cys Phe Leu Thr 1 5 10 15

Ala Val His Pro Glu Pro Pro Thr Ser Cys Lys Glu Asn Gln Tyr Pro 20 25 30

Thr Asn Ser Arg Cys Cys Asn Leu Cys Pro Pro Gly Gln Lys Leu Val 35 40 45

Asn His Cys Thr Glu Val Thr Glu Thr Glu Cys Leu Pro Cys Ser Ser 50 55 60

Ser Glu Phe Leu Ala Thr Trp Asn Arg Glu Lys His Cys His Gln His 65 70 75 80

Lys Tyr Cys Asp Pro Asn Leu Gly Leu Gln Val Gln Arg Glu Gly Thr 85 90 95

Ser Lys Thr Asp Thr Thr Cys Val Cys Ser Glu Gly His His Cys Thr $100 \hspace{1.5cm} 105 \hspace{1.5cm} 110 \hspace{1.5cm}$

Asn Ser Ala Cys Glu Ser Cys Thr Leu His Ser Leu Cys Phe Pro Gly 115 120 125

Leu Gly Val Lys Gln Met Ala Thr Glu Val Ser Asp Thr Ile Cys Glu 130 135 140

Pro Cys Pro Val Gly Phe Phe Ser Asn Val Ser Ser Ala Ser Glu Lys 145 150 155 160

Cys Gln Pro Trp Thr Ser Cys Glu Ser Lys Gly Leu Val Glu Gln Arg 165 170 175

Ala Gly Thr Asn Lys Thr Asp Val Val Cys Gly Phe Gln Ser Arg Met 180 185 190

Arg Ala Leu Val Val Ile Pro Ile Thr Leu Gly Ile Leu Phe Ala Val 195 200 205

Leu Leu Val Phe Leu Cys Ile Arg Lys Val Thr Lys Glu Gln Glu Thr 210 215 220

Lys Ala Leu His Pro Lys Thr Glu Arg Gln Asp Pro Val Glu Thr Ile 225 230 235 240

Asp Leu Glu Asp Phe Pro Asp Ser Thr Ala Pro Val.Gln Glu Thr Leu 245 250 255

His Trp Cys Gln Pro Val Thr Gln Glu Asp Gly Lys Glu Ser Arg Ile 260 265 270

Ser Val Gln Glu Arg Gln 275 <210> 17 <211> 534 <212> PRT

<213> Porcus

<400> 17

Val Ser Gln Asn Val Lys Val Glu Ile Phe Pro Glu Asp Lys Met Ile 20 25 30

Ala Gln Ile Gly Asp Ser Ala Ser Leu Thr Cys Ser Ala Pro Asp Cys $35 \hspace{1cm} 40 \hspace{1cm} 45$

Glu Ser Ser Leu Ser Phe Ser Trp Arg Thr Gln Ile Asp Ser Pro Leu
50 60

Asn Gly Lys Val Lys Thr Asn Gly Thr Arg Ser Thr Leu Val Met Asn 65 70 75 80

Pro Val Ser Phe Glu Asn Glu His Ser Tyr Leu Cys Thr Val Ser Cys 85 90 95

Gly Asn Leu Lys Gly Glu Arg Gly Ile Gln Val Glu Ile Tyr Ser Phe 100 105 110

Pro Lys Asp Pro Glu Ile His Trp Ser Ser Leu Pro Glu Val Gly Lys 115 120 125

Pro Val Thr Val Arg Cys Leu Val Pro Asp Val Tyr Pro Val Glu Lys 130 135 140

Leu Glu Ile Glu Leu Leu Lys Asp Asn His Ser Met Val Ser Gln Asn 145 150 155 160

Phe Leu Glu Leu Ile Asp Ile Lys Ser Lys Glu Thr Lys Ser Leu Glu 165 170 17-5

Phe Thr Phe Thr Pro Thr Glu Glu Asp Ile Gly Lys Ala Ile Val Cys 180 185 190

Gln Ala Thr Leu Ile Ile Asp Gly Gln Pro Ser Val Lys Thr Thr Pro 195 200 205

Glu Lys Met Gln Val Tyr Ile Ser Pro Lys Asp Pro Val Ile Ser Val 210 215 220

Asn Pro Ser Thr Ser Leu Gln Glu Gly Asp Ser Met Met Thr Cys 225 230 235 240

Thr Ser Glu Gly Leu Pro Ala Pro Gln Ile Ser Trp Ser Lys Leu 245 250 255

Asp Asn Gly Asp Gln Gln Leu Leu Ser Gly Asn Ala Thr Leu Thr Leu 260 265 270

Ile Ala Met Arg Met Glu Asp Ser Gly Ile Tyr Val Cys Glu Gly Val 275 280 285

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Asn Pro Val Gly Thr Asn Arg Lys Glu Val Glu Leu Thr Val Gln Val
Ala Pro Arg Asp Thr Thr Ile Ser Val Asn Pro Ser Ser Thr Leu Glu
                    310
Glu Gly Ser Ser Val Asn Met Thr Cys Ser Ser Asp Gly Phe Pro Ala
                                     330
                325
Pro Lys Ile Leu Trp Ser Lys Lys Leu Arg Asp Gly Asn Leu Glu Pro
Leu Ser Glu Asn Thr Thr Leu Thr Leu Thr Ser Thr Lys Met Glu Asp
                            360
Ser Gly Ile Tyr Val Cys Glu Gly Ile Asn Gln Ala Gly Ile Asn Arg
Lys Glu Val Glu Leu Ile Ile Gln Ala Ala Pro Lys Asp Leu Gln Leu
Thr Ala Phe Pro Ser Glu Ser Val Lys Glu Gly Asp Thr Val Ile Ile
                405
Ser Cys Thr Cys Gly Asn Val Pro Pro Thr Leu Ile Ile Leu Lys Lys
                                425
Lys Ala Glu Thr Gly Asp Thr Val Leu Lys Ser Thr Asp Gly Ala Tyr
                            440
        435
Thr Ile His Arg Ala Arg Leu Ala Asp Ala Gly Val Tyr Glu Cys Glu
                        455
Ser Lys Asn Glu Ile Gly Leu Gln Leu Arg Ser Ile Thr Leu Asp Val
465
                    470
                                         475
Lys Gly Arg Glu Ser Asn Lys Asp Tyr Phe Ser Ser Glu Leu Leu Val
                485
                                     490
Leu Tyr Cys Ala Ser Ser Leu Ile Ile Pro Ala Ile Gly Val Ile Ile
            500
                                505
                                                     510
Tyr Phe Ala Arg Lys Ala Asn Met Arg Gly Ser Tyr Ser Leu Val Asp
        515
                            520
                                                 525
Ala Gln Lys Ser Lys Val
    530
<210> 18
<211> 807
<212> DNA
<213> Vacca spp
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gaaccagcca ctgcttgtgg agagaagcaa tacccagtga acagtctttg ctgtgatttg 120
tgcccgccgg gacagaaact ggtgaacgac tgcacagagg tcagcaaaac agaatgccag 180
tectgeggta aaggegaatt ettgteeace tggaacagag agaaatactg teacgageae 240
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agatactgca accccaacct agggctccgg atccagagcg agggtacctt gaatacagac 300 accatttgtg tatgtgtcga aggccaacac tgtaccagtc acacctgcga aagttgcacg 360

ccccacagct tgtgtctccc tggcttcggg gtcaagcaga tcgctacagg gcttttggat 420 accgtctgtg aaccctgccc gctcggcttc ttctccaacg tgtcatctgc ttttgaaaag 480 tgtcaccgtt ggacaagctg cgagagaaaa ggcctggtgg aacaacacgt ggggacgaac 540 aagacagatg ttgtctgcgg tttccagagt cggatgagga ccctggtggt gatccccgtc 600 acgatgggag tcttgttgc tgtcctgttg gtatctgcct gtatcaggaa cataaccaag 660 aagcggcagc taaggccctg caccctatgg ctgaaaggca ggatcccgtg gagacgattg 720 atccggagga ttttcccggc ccccacccgc ctctccggtg caagagacct tatgctggtg 780 tcagccggtc gcccaggagg acggcaa

<210> 19

<211> 269

<212> PRT

<213> Vacca spp

<400> 19

Ala Val His Ser Glu Pro Ala Thr Ala Cys Gly Glu Lys Gln Tyr Pro 20 25 30

Val Asn Ser Leu Cys Cys Asp Leu Cys Pro Pro Gly Gln Lys Leu Val 35 40 45

Asn Asp Cys Thr Glu Val Ser Lys Thr Glu Cys Gln Ser Cys Gly Lys 50 55 60

Gly Glu Phe Leu Ser Thr Trp Asn Arg Glu Lys Tyr Cys His Glu His 65 70 75 80

Arg Tyr Cys Asn Pro Asn Leu Gly Leu Arg Ile Gln Ser Glu Gly Thr 85 90 95

Leu Asn Thr Asp Thr Ile Cys Val Cys Val Glu Gly Gln His Cys Thr 100 105 110

Ser His Thr Cys Glu Ser Cys Thr Pro His Ser Leu Cys Leu Pro Gly
115 120 125

Phe Gly Val Lys Gln Ile Ala Thr Gly Leu Leu Asp Thr Val Cys Glu 130 135 140

Pro Cys Pro Leu Gly Phe Phe Ser Asn Val Ser Ser Ala Phe Glu Lys 145 150 155 160

Cys His Arg Trp Thr Ser Cys Glu Arg Lys Gly Leu Val Glu Gln His 165 170 175

Val Gly Thr Asn Lys Thr Asp Val Val Cys Gly Phe Gln Ser Arg Met 180 185 190

Arg Thr Leu Val Val Ile Pro Val Thr Met Gly Val Leu Phe Ala Val 195 200 205

Leu Leu Val Ser Ala Cys Ile Arg Asn Ile Thr Lys Lys Arg Gln Leu 210 215 220

Arg Pro Cys Thr Leu Trp Leu Lys Gly Arg Ile Pro Trp Arg Arg Leu 225 230 235 240



Ile Arg Arg Ile Phe Pro Ala Pro Thr Arg Leu Ser Gly Ala Arg Asp

Leu Met Leu Val Ser Ala Gly Arg Pro Gly Gly Arg Gln

<210> 20 <211> 867 <212> DNA <213> Vacca spp

<400> 20

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gcatggatcc atgggactga gtaacattct ctttg

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35

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<400> 29 gaatteatgg ttetgttgee tetgeagtg	29
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<220> <223> Description of Artificial Sequence: Porcus spp/ovalbumen chimeric peptide	
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1 5 10 15

Arg Ser Phe Asp Gln Ala Thr Trp Thr Leu Arg 20 25

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:Porcus spp/ovalbumen chimeric peptide

<400> 31

Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly
1 5 10 15

Arg Leu Pro Cys His Phe Thr Asn Ser Gln
20 25

<210> 32

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:Porcus spp/ovalbumen chimeric peptide

<400> 32

Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly 1 5 10 15

Arg Lys Gly Pro His Gly Leu Val Pro Ile His Gln Met Ser 20 25 30

<210> 33

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<400> 33

Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly
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Arg Gly Leu Val Pro Ile His Gln Met Ser

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<212> PRT

<213> Artificial Sequence



<220>

<400> 34

Arg Val Gln Ile Lys Asp Lys Gly Ser Tyr Gln Cys
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Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly
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Arg Lys Ser Gln Ala Tyr Phe Asn Glu Thr Gly Glu Leu

<210> 37

<211> 29

<212> PRT

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Arg Ala Ser Leu Lys Ser Gln Ala Tyr Phe Asn Glu Thr



<210> 38

<211> 30

<212> PRT

<213> Artificial Sequence

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<400> 38

Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly
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Arg Tyr Met Gly Arg Thr Ser Phe Asp Gln Ala Thr Trp Thr 20 25 30

<210> 39

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Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly 1 5 10 15

Arg